

Section 2

2.07 PLANS AND SPECIFICATIONS:

All plans and specifications submitted shall be in strict compliance with the Engineering Standards contained herein and shall meet any special conditions that may be reasonably required. The submittal shall clearly present only the required information. The design and installation of all facilities shall insure development of an integrated water system. No work shall commence on any facilities until the plans and specifications are approved in writing by Denver Water. Plans and specifications should not be submitted for work that will not be installed within 6 months of the approval date.

- A. Two sets of detailed plans and specifications for system extensions shall be submitted to Denver Water's Water Sales Section for approval. Prior to Denver Water's review of the water plans, the appropriate review fee must be paid. The copies will contain the plan requirements as stated below:

1. Water main in plan view showing:
 - a. Location and dimensions of dedicated streets, easements, and rights-of-way.
 - b. Lots to be served.
 - c. All existing or proposed curb and gutter.
 - d. The proposed alignment of the water main and the location of all proposed water facilities such as valves, fire hydrants, fittings, etc.
 - e. The profile shall also be required on this plan for all water mains 16 inches in diameter and larger.
 - f. Proposed elevation, upstream and downstream hydraulic gradient line, and pressure on PRVs.
 - g. Indicate that Denver Water has the right to verify PRV settings for Master Meter and Read and Bill areas and Denver Water owns all PRVs connected to Denver Water conduits. In Master Meter and Read and Bill areas, Distributors own all PRVs connected to their lines.
 - h. Show meter location for all domestic connections.
2. Combined utilities plan view (separate from the water main plan) containing or showing:
 - a. Location and dimensions of dedicated streets, easements and rights-of-way.

- b. Lots to be served.
 - c. All existing or proposed curb and gutter.
 - d. All existing or proposed utilities. Sewer information may be submitted on a separate sheet.
 - e. All existing or proposed obstructions such as vaults, catch basins, traffic islands, etc.
 - f. The proposed alignment of the water mains and the location of all proposed facilities such as valves, fire hydrants, fittings, etc.
 - g. Show meter location for all domestic connections.
3. Typical street cross-sections showing:
- a. Property/easement lines.
 - b. Street, curb and gutter, and existing or proposed utilities complete with dimensions to property lines.
4. Profile of Centerline of the Pipe showing:
- a. Official street grades.
 - b. Existing ground line.
 - c. Any proposed or existing utility crossing the proposed water main.
 - d. Top of pipe profile of proposed 16 inch and larger water mains, and top of pipe profile of 12 inch water mains if requested by Denver Water.
5. Detail sheets showing all relevant information such as: pipe and fitting restraint, hydrant installations, blow-off installations, proposed crossings, etc.
6. Additionally, all plans shall:
- a. Be made from actual field surveys by a Land Surveyor licensed by the State of Colorado, referenced to land corners or other official survey control points and be of sufficient accuracy so that the facilities can be accurately staked for installation and can be readily located after installation for maintenance, tapping, and control.

In Denver and Total service areas, identify all surface features of the water facilities (i.e. valves, hydrants, manholes, meter pits, etc.) relative to NAD83 State Plane Coordinates with survey accuracy standards by GPS or other survey methods and equated to a unique value for each; such values presented in tabular format as part of the drawings, and submitted to Denver Water by acceptable electronic media. Values on valves, manholes, meter pits, etc. shall be given at the radial point of the feature and on the center of the operating nut of hydrants.

- b. Show the approved permanent water source, which can supply sufficient water for chlorination, flushing, and hydrostatic testing and the anticipated water demand for this purpose.
- c. Show sufficient adjacent area to give the relation of new facilities to existing facilities.
- d. At the time of submittal and prior to Denver Water's review of the water plans following statement and appropriate signature must appear on the cover sheet of the plans (insert the name of the fire department having jurisdiction):

"All fire hydrants shall be installed according to Denver Water Standards. The number and location(s) of fire hydrant(s) and fire flow as shown on this water main installation is correct as specified by the _____ Fire Department."

Signature of Fire Chief or Designated Representative

Date Signed

- e. Contain the signature and stamp of the Professional Engineer licensed in the State of Colorado responsible for the design of the system extension.
7. The specifications shall:
- a. State that the trench shall be excavated and the pipe exposed for inspection at any location on the project if so requested by Denver Water.
 - b. State that sterilization and flushing of all mains shall be inspected and certified by the health department having jurisdiction and that one copy of the certification shall be sent to Denver Water. The certification shall state the location of the main that the main has been inspected by a representative of the health department

having jurisdiction and was found to comply with the procedures set forth by that department.

- B. Submittals shall include the acknowledgment letter described in 2.08.
- C. Submittals for PUD/PBG complexes shall additionally show all existing and proposed structures, driveways, and parking facilities, on both the water main plan and the combined plan.
- D. Submittal shall include all of the items outlined in Chapter 4 when the granting of easements is required. Partial submittal of those items outlined in Chapter 4 will result in return of the items received.
- E. After final approval and prior to construction, the final water main plans and specifications, per 2.07 A.1. and conforming to the requirements listed below, shall be delivered to Denver Water.
 - 1. An AutoCAD drawing file using the layers, line types, colors, templates, and pen sizes for water facilities as defined on Denver Water's AutoCAD disk, available ROM Denver Water. Drawing submitted on an AutoCAD disk must be made in model space, not paper space.
 - 2. Overall size of plan submittal shall be 24 inch x 36 inch.
 - 3. The drawings shall be one of the following type and must be legible and of sufficient quality to meet the needs of Denver Water (suitable for microfilming):

All should be single matte.

An original ink on polyester film.

A photographic polyester film duplicate reverse reading matte front side ("silver slicks" are acceptable).

A wash-off polyester film reverse reading matte front side.

Electrostatic copies on polyester film (reverse reading and coated with clear spray).

Please note: Diazo, polyester film, and sepia are not acceptable.

- 4. A title block on each sheet in the lower right hand corner, containing pertinent information concerning the map, including the project title, scale, and date. A one inch space must be left clear under the title block to enable Denver Water to assign each sheet a drawer and number.
- 5. Lettering shall be mechanical or legible equivalent. Original drawings shall be in ink.
- 6. Horizontal scale shall not be smaller than one inch equals 100 feet.

7. Aerial photography of the plan view will not be acceptable.

When a conflict occurs between or within standards, specifications and drawings, an interpretation shall be made by the Director of Engineering or an appointed representative pursuant to 1.05.

Addenda and modifications to the drawings and specifications take precedence over the original documents. In the drawings, calculated dimensions shall take precedence over scaled dimensions and noted material over graphic indication.

Dedicated streets, easements, and planned development complexes shall conform to the requirements of other sections of these Standards. The copy of the recorded subdivision plat furnished in the final submittal, or a recorded copy of the deed for the property involved, or a recorded copy of a easement shall be furnished to Denver Water as evidence of conformance with 5.09.